

Equatorial Platform Users Manual

Description

The equatorial platform is designed to move a telescope in order to track the movement of three celestial bodies at different times. These bodies are the Sun, Moon, and Stars. The user will input which body to track, and platform will adjust to keep the object centered in the eyepiece.

Using the Platform

(Please refer to the picture supplied for the position of the buttons)

- 1) Plug in the two power supplies.
 - a. The inputs are located in the bottom left side of the blue enclosure.
 - b. Make sure the 5V supply is plugged into the left hole (labeled 5V) and the 12V supply is plugged into the right whole (labeled 12V).
- 2) Level the platform
 - a. When plugged in, the LCD screen will automatically prompt “Z Axis; Use arrows to center; Enter when done”.
 - i. To spin the platform clockwise, press the ⤴ button on the enclosure.
 - ii. To spin the platform counterclockwise, press the ⤵ button on the enclosure.
 - iii. Press Enter button.
 - b. The LCD screen should now prompt “E/W Level; Use arrows to level; Enter when done”.
 - i. To tilt the platform up, press the ⤴ button on the enclosure.
 - ii. To tilt the platform down, press the ⤵ button on the enclosure.
 - iii. Use bull’s eye level attached to the platform to the left of the blue enclosure to decide when E/W axis is level.
 - iv. Press Enter button.
 - c. The LCD screen should now prompt “N/S Level; Use arrows to level; Enter when done”.
 - i. To tilt the platform up, press the ⤴ button on the enclosure.
 - ii. To tilt the platform down, press the ⤵ button on the enclosure.
 - iii. Use bull’s eye level attached to the platform to the left of the blue enclosure to decide when N/S axis is level.
 - iv. Press Enter button.

- d. The LCD screen should now prompt “Now at Home Position; Press Sun, Moon, or Star to continue”.
 - i. Press Sun button (located on the right side of the enclosure) if intending to look at the sun.
 - ii. Press Moon button (located on the right side of the enclosure) if intending to look at the Moon.
 - iii. Press Star button (located on the right side of the enclosure) if intending to look at a star.
 - e. Once either Sun, Moon, or Star button is pressed, the LCD screen will prompt “Moving to Start Position”.
 - i. During this prompt, the motors will turn, positioning the platform in the starting position.
 - f. Once the platform is done positioning itself, the LCD screen will prompt “Start Position; Press Start to begin tracking”.
 - i. Find the object intended to be observed and center in the eyepiece of the telescope.
 - ii. Press Start button.
 - iii. The LCD screen will prompt the amount of time the platform has been tracking (from -20 minutes to 20 minutes) as well as the number of steps each motor has taken.
 - g. After 40 minutes, the LCD screen will prompt “Program now complete; Press Reset if you wish to start over; or move back to home position”.
 - i. Either press Reset button in order to re-level the platform manually.
 - 1. Go back to 2 and repeat.
 - ii. Or press Home button to bring the platform back to the Home Position.
 - 1. The LCD will prompt “Moving to Home Position” while the motors level the platform.
 - 2. Go back to 2-d.
 - h. Note – User can press Reset at anytime to start over.
- 3) To put the platform in automatic mode, press the A button.
- a. The platform will then run automatically for ten minutes, or until the S button is pressed.
 - b. The user can also press the M button to switch from automatic to manual at any time.
- 4) To shut the device off, unplug both the 5V and 12V power supply from the blue enclosure.

Other Features

- 1) The reset button is located on the top of the board is used to reset the program.
- 2) The port in the middle of the board, just left of the Home button, is for a hand controller or auto guider.
 - Hand controller and auto guider not supplied.
 - Software doesn't currently support hand controller or auto guider.
- 3) The contrast of the LCD may be adjusted by turning the gold knob on the potentiometer.
 - Potentiometer located on the right hand side of the reset button.
- 4) The serial port at the top right is for programming and maintenance.
 - Software not included.

Board Layout



Trouble Shooting Guide

Problem:

- * Device does not turn on.

Solution:

- * Check to make sure the board's power supply is plugged into a working outlet.
- * Check to make sure the board's power supply is plugged into the board port.
 - The board must be powered with the 12 volt power supply.
- * The contrast on the screen may have been turned all the way down so adjust the dial on the potentiometer.
 - More information regarding potentiometer in "Other Features."

Problem:

- * The board has power but the motors do not move.

Solution:

- * Make sure the motor cables are plugged into the socket on the board.
- * Make sure the motor's power supply is plugged into a working outlet.
- * Make sure the motor's power supply is plugged into the motor port on the board.
 - The motors need to be supplied with the 6 volt power supply.

Problem:

- * One of the motors operates but it is going in the wrong direction.

Solution:

- * The motor cable is plugged into the board backwards.

Problem:

- * The platform fails to move in one direction.

Solution:

- * The motor is bound up on the screw. To fix, reverse the direction of the motor manually and apply pressure in that direction.

Problem:

- * The platform says it's moving one direction when really it's moving a different direction.

Solution:

- * Make sure motor cables are plugged into the proper sockets.
 - They are color-coordinated to help avoid confusion.

Problem:

- * The board freezes up and none of the buttons respond when being pressed.

Solution:

- * Press reset and start the program all over.
- * Board may have overheated so turn the PIC board off and leave off for at least four hours.

****IMPORTANT****

THE PIC BOARD MUST BE POWERED BY THE 12 VOLT POWER SUPPLY. LIKEWISE, THE MOTORS MUST ONLY USE THE 6 VOLT POWER SUPPLY. MIXING UP THESE TWO CABLES AND PLUGGING THEM INTO THE WRONG PORTS COULD DAMAGE THE BOARD BEYOND REPAIR.